AMERICAN ALMANAC

OF

PHOTOGRAPHY,

FOR

1863,

ILLUSTRATED WITH WOOD ENGRAVINGS.

BY

CHARLES WALDACK.

CINCINNATI, O.
PUBLISHED BY PETER SMITH, 36 WEST FIFTH STREET.
H. WATKIN, PRINTER, 140 WEST THIRD STREET.
For Sale by all Dealers in Photographic Materials.

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CONTENTS.

PREFACE.

The publication of this Almanac is an experiment. Will it succeed? This is a question which we leave to the decision of our patrons. We have done all that we could to insure success, so far as it depends on the reading matter we give. If this does not answer the expectations of our readers it will be owing, not to a want of zeal or conscientious performance of our part, but rather to our inexperience in the style of publication we have undertaken. The matter which we give, original or copied, has been selected with reference to usefulness. We give the standard photographic processes, facts of every day occurrence, notices and descriptions of apparatus and processes not generally adopted, but of great value, besides tables of equivalents, weights and measures, etc. We have avoided giving such matter as is generally contained in treatises on Photography, selecting only that which is new and of actual value; or that which, if a repetition, is only because we wish to impress it upon the minds of our readers.

CHAS. WALDACK.

CALENDAR for 1863.

	Sund.	Mond.	Tuesd.	Wedn.	Thurs.	Friday	Satur.
JAN..	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
	..	..	..	..	..	..	..
FEB...	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	..	..	..	..	..	.	..
MARCH	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	..	..	..	..
APRIL.	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	..	..
MAY..	..	..	..	..	..	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	..	..	..	..	..	..
JUNE..	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	..	..	..	..

	Sund.	Mond.	Tuesd.	Wedn.	Thurs.	Friday	Satur.
JULY..	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	.
AUG...	..	..	..	..	..	..	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	..	..	..	..	.
SEPT..	..	..	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	..	..	..
OCT...	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
	..	..	..	..	..	..	..
NOV...	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	..	..	..	..	..
DEC...	.	..	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31	..	..

PHOTOGRAPHY DURING 1862.

Ifthe year 1862 has witnessed no startling discoveries in the Photographic Art, great progress has been made in the practice of the processes generally used.

The popular picture continues to be the Card Photograph. The immense increase of business caused by the introduction of this style in America, has necessiated the construction of apparatus by which a number of negatives can be taken on one plate, so as to reduce the labor of the printer.—Amongst those which have become popular lately, we notice Ormsbee & Wing's multiplying camera.

Quarter and third size lenses, for the Card Photograph, have also been greatly improved. Messrs. C. C. Harrison's, and Holmes, Booth & Hyden's productions in this line can compete with any of foreign manufacture.

We remark that they are all fitted with central stop,—a great improvement on the old method.

Albumen paper, of course, is in great demand now. It is the opinion of many, however, that it will have to be abandoned. According to experi-

ments made by W. Spiller, hyposulphite of soda does not entirely dissolve albuminate of silver, and consequently albumen prints cannot be entirely fixed, silver always remaining in the whites. It can be proved to exist there, by applying hydrosulphate of ammonia, when the whites will turn brown while it will leave them unaltered where the same test is applied to prints on ordinary paper. If the silver in the whites of albumen prints is in such a state as to be conducive to their distruction, it is a matter to be investigated.

If albumen paper has to be abandoned, we are not of those who will regret it. Its high price, the uncertainty and difficulty in its use, acknowledged by all photographers, its unartistic effect, are among its disadvantages. For small subjects, however, it is very valuable, but we hope we will be able to replace it by some other paper, giving the same definition. A step has already been made towards it by Mr. Cooper, who proposes the use of resinized paper.

Photographers in the United States have seen their business greatly increased by the war. The melainotype and ambrotype, which were thought to be on the eve of disappearing when the Card Photograph was introduced, have taken a new start. This is on account of the facility with which

they are made and delivered, an advantage which is greatly appreciated by our soldiers on the move, as also by all other people who have little time to spare. If we add that the positive collodion picture is the only one that can conveniently be made by traveling operators, and that thousands of that class follow the different armies in the field, nobody need wonder at the revived popularity of that kind of picture.

Mr. C. C. Harrison has lately brought before the public a new kind of lenses, by which pictures are made, including a very large angle. These lenses are pronounced by competent persons, as superior to any made.

In England and on the Continent, Dallmeyrs triple achromatic lens is gaining favor every day. It is principally suited for copying architectural views, etc., where straight lines have to be re-produced, and includes a large angle of view.

Mr. Coleman Sellers has gotten up a new and very simple press. specially adapted to card photographs. Double roll presses are getting much in use, and are well adapted for small size pictures. The old steel plate press is, however, much to be preferred for large sizes.

The dry collodion process which seems to meet with most favor, just now, is Mayor Russell's

tannin process. It is claimed that in this process success is independent of the molecular state of the collodion. Professor Draper, the worthy President of the American Photographic Society, suggested warm development of the dry plate,and succeeded in this way in reducing the time of exposure conderably. The sestitiveness of such plates is, however, not great enough for instantaneous exposure. Mr. Henry Anthony suggested the fuming of the dry plate with ammonia gas, before exposure. Mr. Borda carried out the suggestion, and found the sensibility greatly increased. Mr. John Glover made some very interesting experiments with dry plates, covered with a solution of tannin and honey. The plates were, after a very short exposure, submmitted to ammonia gas, which brought out images perfect in all their details, but wanting in intensity. These images can be strengthened by a re-development with nitrate of silver and pyrogallic. Mr. H. Anthony uses, to cover his dry plates, a solution of an article known as *solidified milk*. The result obtained by that process is very fine. Dry plate photography has been greatly simplified by the invention of a plate box and plate holder, arranged in such a way that the plates can be changed in the open air.

A new photographic journal has been established during the year: Bulletin, Belge de la Photographie, L. Delteme proprietor, Brussels, Belgium. With the co-operation of such writers as Dr. Van Monckhoven, C. Ommeganck, etc., its success is certain. We recommend it to our French reading friends.

We give further a list of the works on photography, published during the last year. All, with the exception of three, bear on the ordinary photographic processes, with silver salts. These three are, *Traite de l'Empression, Photographique, san sels d'argent, by Alph. Portevin* (*Treaties on Photographic Printing, without salts of silver*).—*Das Photographise Kohlebild, by F. Bollman, (the carbon print); and a Photo. Zincography, by Col. Sir H. James.* The last one is the most important. The results obtained by the process therein described are superior to those by any other process, the silver printing excepted.

Believing as we do, that the true progress of photography lies in the abandonment of the silver-printing, and the adoption of the printing in some indellible ink, we hail researches in that direction with the greatest satisfaction.

PHOTOGRAPHIC PERIODICALS IN THE UNITED STATES AND EUROPE.

UNITED STATES.

American Journal of Photography, Seely & Bartlett, Editors and Proprietors, 244 Canal street, N. Y.

Humphrey's Journal of Photography, John Towler, M. D. Editor, Joseph H. Ladd, Publisher, 60 White St. N. Y.

GREAT BRITAIN.

The Photographic Journal, E. Diamond, Editor, Francis & Taylor, Publishers, London.

The British Journal of Photography, G. Shadbolt, Editor, H. Greenwood, Publisher, 32 Castle street, Liverpool.

The Photographic News, G. Wharton Simpson, Editor, Thomas Piper, Publisher, 32 Paternoster Row, London.

Photographic Notes, Thomas Sulton, Editor, Isle of Jersey.

Manual of Photography, by Jesse Gostick, Practical Photographer on glass and paper.

FRANCE.

Bulletin de la Societe Francaise de Photographie, published by the French Photographical Society.

Le Moniteur de la Photographie, E. Lacan & Liesegang, Editors, Paris.

La Lumiere, Alexis Gaudin, Publisher, Marc Antoine Gaudin, Editor, Paris.

Revue Photographique, Wulff, Editor and Publisher.

BELGIUM.

Bulletin Belge, de la Photographie, L. Delteme, Publisher, Place St. Gudule, Brussels.

GERMANY.

Photographisches Archiv, Paul Liesegang, Editor, Elberfeld.

Wm. Horn's Photographisches Journal, Leipzig.
Zeitschrift der Photographie, K. T. Kreutzer, Editor, Seidel, Publisher.

WORKS PUBLISHED ON PHOTOGRAPHY DURING THE YEAR 1862.

UNITED STATES

A Practical Treatise on Albumen Photography, by S. R. Divine.
The Photographic Manuel, by N. G. Burgess.
A Treatise on Photography, (3d edition,) by Charles Waldack.
The Card Photograph, by Charles Waldack.

GREAT BRITAIN.

Photographic Difficulties, by T. Caddy Ponting.
On Photo-Zincography, by Col. Sir. H. James.

FRANCE.

Traite Populaire de Photographie, by D. Van Monckhoven.
Traite de l'Impression Photographique, sans sels d'argent, by Alph. Poitevin.
Monographie du Stereoscope, by H. De La Blanchere.
L'Art de la Photographie, by Disderi.
Photographie Rationnelle, by A. Belloc.
L'Amateur Photographe, by Charles Bride.
Annuaire de la Photographie, par Delestre.
Le Procede au Tannin, by Major Russell, (translated from the English).
Nouveau Manuel de Photographie, (Manuel Roret).

NETHERLANDS.

Photographie op Collodium, by D. Van Monckhoven, (translated from the French).

GERMANY.

Agenda fur den Praktischen Photographen, by J. Kruger and O. Spamer.

Photographisches Nachschlagebuch, by D. Julius Schnauss.

Der Apparat des Photographes, by J. Kruger.

Vade Mecum des Praktischen Photographen, by K. De Roth.

Die Photographie auf Collodium, by D. Van Monckhoven, (translated from the French).

Das Photographische Kohlebild, by Fr. Bollman.

Die Praktische Photographie unserer Zeit, by Fr. Bollman.

Handbuch der Photographie, by Fr. Bollman.

Der Praktischen Photograph, by J. Lemling.

PHOTOGRAPHIC SOCIETIES.

American Photographical Society.

American Photographic Exchange Club.

Photographic Society of London.

North London Photographic Association.

South London Photographic Society.

Blackheath Photographic Society.

Manchester Photographic Society.

Liverpool Photographic Club.

Birmingham Photographic Society.

Chorlton Photographic Society.

Photographic Society of Scotland.

Edinburgh Photographic Society.

City of Glasgow and West of Scotland Photographic Society.

Newcastle-upon-Tyne and North of England Photographic Society.
Bradford Photographic Society.
Amateur Photographic Association.
Photographic Exchange Club (British).
Societe Francaise de Photographie.
Societe Photographique de Marseille.
Der Allgemeine Deutsche Photographen Verein.
Der Photographische Gesellschaft in Wien.

WEIGHTS AND MEASURES.

APOTHECARIES WEIGHT.

SOLID MEASURE.

20 Grains	= 1 Scruple	=	20 Grains,	
3 Scruples	= 1 Drachm	=	60	"
8 Drachms	= 1 Ounce	=	480	"
12 Ounces	= 1 Pound	=	5760	"

FLUID.

		Symbol.
60 Minims	= Fluid Drachm	f. ʒ
8 Drachms	= 1 Ounce	f. ℥
20 Ounces	= 1 Pint	O
8 Pints	= 1 Gallon	gall.

The above weights are those usually adopted in Formulæ.

Chemicals in quantities above ¼ oz. are sold by

AVOIRDUPOIS WEIGHT.

27 11/32 Grains	= 1 Drachm =	27 11/32 Grains	
16 Drachms	= 1 Ounce =	437½	"
16 Ounces	= 1 Pound =	7000	"

Precious Metals are usually sold by

TROY WEIGHT.

24 Grains	= 1 Pennyweight =	24 Grains	
20 Pennyweights	= 1 Ounce =	24	"
12 Ounces	= 1 Pound =	5760	"

FRENCH WEIGHTS AND MEASURES,

AND THEIR EQUIVALENTS IN ENGLISH.

1	Cubic Centimeter	=	17 minims nearly
$3\frac{1}{2}$	" "	=	1 drachm
28.4	" "	=	1 ounce
50	" "	=	1 oz. 6 drachms 5 minims
100	" "	=	3 oz. 4 drachms 9 minims
1000	" "	=	35 oz. 1 drachm 36 minims
	or 1 liter, = to 61 cubic inches		

The unit of French liquid measure is a cubic *centimeter.*

A cubic *centimeter* of water measures nearly 17 minims (16·896); it weighs 15·4 grains, or 1 *gramme.* A cubic *inch* of water weighs 252·5 grains.

The unit of French weights is the gramme equal to 15·4 grains: thus a drachm (60 grains) is nearly 4 grammes (3·88). An easy way to convert grammes into English weight, divide the sum by 4, which gives the equivalent in drachms very nearly, thus:

Grammes			Drachms	oz.	dr.		grains
100	÷	4	= 25	= 3	. 1	+	43

TABLE TO CONVERT GRAMMES INTO GRAINS.

Grammes.	Grains.	Deci-grammes.	Grains.	Centi-grammes.	Grains.	Mini-grammes.	Grains.
1	15·4346	1	1·5434	1	·1543	1	·0154
2	30·8692	2	3·0869	2	·3086	2	·0308
3	46·3038	3	4·6304	3	·4630	3	·0463
4	61·7384	4	6·1738	4	·6173	4	·0617
5	77·1730	5	7·7173	5	·7717	5	·0771
6	92·6076	6	9·2607	6	·9260	6	·0926
7	108·0422	7	10·8042	7	1·0804	7	·1080
8	123·4768	8	12·3476	8	1·2347	8	·1234
9	138·9114	9	13·8911	9	1·3891	9	·1389

The unit of French measures of length is the *millimeter.*

The meter measures 39·37 inches.
The centimeter measures 00·39 inches, or 3·28 feet.
A foot is equal to 30·48 centimeters.
A yard is equal to 91·44 centimeters.
A square inch is equal to 6·45 square centimeters.
An inch lineal is equal to 2·54 centimeters.

THERMOMETER SCALES.

The zero of the Centigrade and of Reaumur's thermometer each corresponds to 32° Fahrenheit.

To convert degrees of Reaumur into equivalent degrees of Fahrenheit, multiply the degrees of Reaumur by 9, divide the product by 4, and add 32; the result will be the degrees of Fahrenheit. 9 Fahrenheit, 5 Centigrade, and 4 Reaumur are equivalents. In Wedgwood's Pyrometer the zero commences at 1·077° Fahrenheit; and each degree instead of being equal to 130° of Fahrenheit, as was supposed by its maker, is only equal to about 20°.

EASY RULES FOR THE REDUCTION OF SCALES.

To convert Reaumur into Fahrenheit multiply by 2·25, and add 32°.

To convert Centigrade into Fahrenheit multiply by 1·8, and add 32°.

SIZES OF CAMERA PLATES.

	Stereoscopic	5½ in. by 3¼ in., 6¾ in. by 3¼ in.
⅑	9th Plate	2½ in. by 2 in.
⅙	6th Plate	3¼ in. by 2¾ in.
¼	Quarter-Plate	4¼ in. by 3¼ in.
⅓	One-third Plate	5 in. by 4 in.
½	Half-Plate	6½ in. by 4¾ in.
1	Whole-Plate	8½ in. by 6½ in.
	Extra Sizes	10 in. by 8 in., 12 in. by 10 in. 14 in. by 12 in., 18 in. by 15 in. 24 in. by 18 in., 30 in. by 26 in.

TABLE OF EQUIVALENTS AND SYMBOLS,

OF THE SIMPLE OR ELEMENTARY BODIES.

In the following table, the numbers are principally deduced from those given by Berzelius, in the fifth edition of his *Lehrbuch*

Name of the Element.	Symbol.	Equivalents.
Aluminium	Al.	13·694
Antimony	Sb.	129·239
Arsenicum	As.	75·224
Barium	Ba.	68·533
Bismuth	Bi.	213·200
Boron	B.	10·914
Bromine	Br.	80·098
Cadmium	Cd.	55.831
Calcium	Ca.	20·164
Carbon	C.	6·019
Corium	Ce.	47·264
Chlorine	Cl.	35·517
Chromium	Cr.	26·700
Cobalt	Co.	29·539
Copper	Cu.	31·699
Didymium	D.	49·600
Fluorine	F.	18 865
Gold	Au.	196·982
Hydrogen	H.	1·000
Iodine	I.	127·082
Iridium	Ir.	98·724
Iron	Fe.	28·087
Lapthanium	La.	47·040
Lead	Pb.	103·738
Lithium	L.	6·543
Magnesium	Mg.	12·671
Manganese	Mn.	27·619
Mercury	Hg.	100·026
Molybdenum	Mo.	29·594
Nickel	Ni.	29·594
Nitrogen	N.	14·027
Osmium	Os.	99·569
Oxygen	O.	8·000

TABLE OF EQUIVALENTS, ETC. *continued*,

Name of the Element.	Symbol.	Equivalents.
Palladium	Pd.	53·323
Phosphorus	P.	31·414
Platinum	Pt.	98.724
Potassium	K.	39.171
Rhodium	R.	52·240
Ruthenium	Ru.	52.163
Selenium	Se.	39.686
Silicium	Si.	22·258
Silver	Ag.	108·146
Sodium	Na.	23.215
Sulphur	S.	16·086
Strontium	Sr.	43.744
Tantalium or Columbi	Ta.	184·032
Tellurium	Te.	64·244
Thorium	Th.	59·604
Titanium	Ti.	24·158
Tin	Sn.	58·918
Tungsten	W.	95·22
Uranium	U.	59·525
Vanadium	V.	68·661
Zinc	Zn.	32.579
Zirconium	Zr.	33.632

TABLE OF SYMBOLS AND ATOMIC WEIGHTS

OF INORGANIC COMPOUNDS.

Compound.	Symbol.	Atomic weights.
Ammonia	NH_3 *or* NH_4O	17
Bichloride of Mercury	$Hg\ Cl_2$	274
Bichromate of Potash	$KO,2Cr_2O_3$	152
Carbonate of Potash	$KO,\ CO_2$	70
Carbonate of Silver	$AgO,\ CO_2$	138
Carbonate of Soda	$Na\ O,CO_2+10Aq.$,	...
Bromide of Ammonium	NH_4Br	96
Chloride of Ammonium	NH_4Cl	54
Iodide of Ammonium	NH_4I	144
Chloride of Barium	$Ba\ Cl+2\ HO$	123
Iodide of Cadmium	$Cd\ I$	182
Chloride of Calcium	$Ca\ Cl$	56

TABLE OF SYMBOLS, AND ATOMIC WEIGHTS, *Continued.*

Compound.	Symbol.	Atomic Weights.
Chloride of Gold	Au Cl	303
Chloride of Iron	$Fe_2 Cl_3$	164
Iodide of Iron	Fe I	154
Bromide of Potassium	KBr	118
Iodide of Potassium	KI	166
Fluoride of Potassium	KF	59
Bromide of Silver	Ag Br	186
Chloride of Silver	Ag Cl	144
Iodide of Silver	Ag I	234
Fluoride of Silver	Ag F	127
Chloride of Sodium	Na Cl	60
Hydrochloric Acid	H Cl	37
Hydriodic Acid	HI	127
Hydrosulphuric Acid	HS	17
Hydrosul. of Ammonia	$NH_4 S + HS$	31
Hyposulphite of Gold or *Sel d' Or*	Au O, $S_2 O_2$ + Na O, $S_2 O_2$ + 4Aq	253
Hyposulphite of Silver	Ag O, $S_2 O_2$	164
Hyposulphite of Soda	Na O, $S_2 O_2$ + 5 HO	125
Nitric Acid	NO_5	54
Nitro-Hydrochl. Acid (*Aqua Regia*)	NO_4 + Cl	...
Nitrate of Ammonia	$NO_5 + NH_3 + HO$	...
Nitrate of Baryta	Ba O, NO_5	131
Nitrate of Lead	Pb O, NO_5	166
Nitrate of Potash	KO, NO_5	102
Nitrate of Silver	Ag O, NO_5	170
Nitrite of Silver	Ag O, NO_3	154
Nitrate of Uranium	$U_2 O_3$ + 6 HO	...
Oxide of Silver	Ag O	116
Potash	KO + HO	57
Protonitrate of Iron	Fe O, No_5 + 7 HO	153
Protosulphate of Iron	Fe O, SO_3 + 7 HO	139
Sulphide of Silver	Ag S	124
Sulphuric Acid	So_2	40
Tetrathionic Acid	$S_4 O_5$	104
Water	HO	9

TABLE OF SYMBOLS AND ATOMIC WEIGHTS OF ORGANIC COMPOUNDS.

Compound.	Symbol.	Atomic Weights
Acetic Acid	$C_4 H_3 O_3 + HO$	60
Acetate of Lead	$PbO, AcO_3 + 3HO$	190
Acetate of Silver	$AgO(C_4 H_3 O_3)$	167
Acetate of Soda	$NaO, AcO_3 + 6HO$	137
Alcohol	$C_4 H O_2$	46
Benzole	$C_{12} H_6$	...
Cyanide of Potassium	K, C_2N, *or* K Cy	66
Chloroform	$C_2 H Cl_3$	...
Citric Acid	$3 HO, C_{12} H_5 O_{11} + 2$ Ag	...
Citrate of Silver	3AgO,Ci	...
Ether	$C_4 H_5 O$	37
Formic Acid	$C_2 HO_3$	37
Gallic Acid	$C_7 H_3 O_5 + HO$	94
Gelatine	$C_{13} H_{10} O_5 N_2$	156
Grape Sugar	$C_{24} H_{28} O_{28}$	396
Pyrogallic Acid	$C_8 H_4 O_4$	84

TABLE

Of the quantity of Iodine, Bromine and Chlorine contained in the Iodide, Bromide and Chlorides used in Photography.

1,000 parts	Iodide of	Lithium,	contain	951	parts	Iodine.
"	"	"	Magnesium	"	914	"	"
"	"	"	Ammonium	"	876	"	"
"	"	"	Sodium	"	847	"	"
"	"	"	Zinc	"	796	"	"
"	"	"	Potassium	"	764	"	"
"	"	"	Cadmium	"	694	"	"
"	"	Bromide of	Lithium	"	925	"	Bromine
"	"	"	Magnesium	"	870	"	"
		"	Ammonium	"	816	"	"

1,000 parts	Bromide of	Sodium	contain	777	parts	Bromine
"	"	"	Zinc	"	714	"	"
"	"	"	Potassium	"	710	"	"
"	"	"	Cadmium	"	588	"	"
"	"	Chloride of	Lithium	"	846	"	Chlorine
"	"	"	Magnesium	"	747	"	"
"	"	"	Ammonium	"	663	"	"
"	"	"	Calcium	"	639	"	"
"	"	"	Sodium	"	607	"	"
"	"	"	Barium	"	290	"	"
"	"	"	Cadmium	"	388	"	"

THE DECIMAL SYSTEM.

The decimal system of weights and measures is the most rational one in use.

The *meter*, which is the unity of measure from which all measures and weights are derived, is the 40,000,000th part of the meridian.

The meter is subdivided as follows:

1 meter = 10 decimeters = 100 centimeters = 1,000 millimeters.

1 diameter = 10 centimeters = 100 millimeters.

1 centimeter = 10 millimeters.

Distance is estimated in *kilometers*, a measure of 1,000 meters in length.

Surfaces are measured by *square meters.*

A square meter is a square surface, measuring one meter on each side.

1 square meter = 100 square decimeters = 10,000 square centimeters = 1,000,000 square millimeters.

1 square decimeter = 100 square centimeters = 10,000 square millimeters.

Volumes are measured by *cubic meters.*

A cubic meter is a cube of one meter on each side.

1 cubic meter = 1,000 cubic decimeters = 1,000,000 cubic centimeter = 1,000,000,000 cubic millimeters.

1 cubic decimeter = 1,000 cubic centimeters = 1,000,000 cubic millimeters.

1 cubic centimeter = 1,000 cubic millimeters.

The unity of measure for liquids is the *liter.*

A liter is equal in capacity to a cubic decimeter.

1 liter = 10 deciliters = 100 centiliters.

1 deciliter = 10 centiliters.

The unity of weight is the *gramme.*

A gramme is the weight of one centiliter or cubic centimeter of distilled water at a temperature of 60° Fahrenheit.

The gramme is subdivided as follows:

1 gramme = 10 decigrammes = 100 centigrammes = 1,000 milligrammes.

1 decigramme = 10 centigrammes = 100 milligrammes.

1 centigramme = 10 milligrammes.

The multiples of the gramme are:

The kilogramme = 10 hectogrammes = 100 decagrammes = 1,000 grammes.

1 hectogramme = 10 decagrammes = 100 grammes.

1 decagramme = 10 grammes.

CAUSES OF ERRORS IN THE USE OF WEIGHTS AND MEASURES.

Photographers often make their solution too weak, or blame the chemist for giving them short weight.

Chemicals are alway sold by avordupois weight, whilst solutions are often indicated in apothecaries weight.

The ounce avordupois contains 437½ grains, whilst the ounce apothecaries weight contains 460 grains.

The fluid measure corresponds to the apothecaries weight. One ounce fluid contains 460 minims, and is the same as the ounce in weight of distilled water. The minim corresponds to the grain.

STANDARD PHOTOGRAPHIC PROCESSES.

NEGATIVE COLLODIAN PROCESS.

NEGATIVE COLLODION.

Iodide of ammonium	35 grains.
Iodide of cadmium	10 grains.
Bromide of cadmium	10 grains.
Ether	5 ounces fluid.
Alcohol	5 ounces fluid.
Pyroxyline	about 60 grains.

The quantity of the pyroxyline cannot be given exactly, one sample thickening the collodion a great deal more than another. The rule is to add as much cotton as possible, without making the collodion too thick to spread evenly over the plate.

The iodides and bromide are first dissolved in the alcohol, the cotton is added to it, and, finally, the ether. The mixture is shaken until all the cotton is dissolved.

The collodion is left to settle for two days, when the clear part is drawn off, by means of a syphon. See engraving, fig. 6.

If to be used immediately, it is advisable to add to this collodion one-fourth or one-fifth of its volume of old collodion. This will ripen it, and make it produce better results.

SILVER SOLUTION.

Nitrate of silver..... 1 ounce.
Distilled water.....12 oz. fluid.
Iodide of potassium..... 2 grains.
Diluted nitric acid..... 1 or 2 drops.
(See article headed "Diluted Nitric Acid.")

Dissolve the nitrate of silver in ten ounces of the water, and the iodide of potassium in the two remaining ounces. Pour the second solution into the first, shake and set in the sunlight for one hour, or in diffused light for one day. This exposing to light may be unnecessary when the distilled water is free from organic matter, but it will never do any injury. Then filter through cotton or paper, and add the diluted nitric acid.

DEVELOPING SOLUTION.

Water, ...40 ounces fluid.
Protosulphate of iron,..... 3 ounces.
Acetic acid, No. 8,..... 4 ounces fluid.
Alcohol, ... 3 ounces fluid.

This solution may be diluted with its volume of water in warm weather.

FIXING SOLUTION.

Hyposulphite of soda,..... 6 ounces.
Water, ...20 ounces.

Old hypobaths which have been used to fix positives on paper can be used to fix negatives.

REDEVELOPING SOLUTION.

No. 1.—Distilled water,..... 4 ounces fluid.
Pyrogallic acid,.....10 grains.

Alcohol,..... 4 drachms fluid.
Acetic acid, No. 8,..... 4 drachms fluid.

No. 2.—NEGATIVE SILVER SOLUTION.

A mixture of No. 1 and No. 2 in the proportion of one drachm of No 1 to three or four drops of No. 2 is flown over the plate, either before or after fixing. If before fixing, it should be done in the dark room.

PRINTING ON ORDINARY PAPER.

SALTING OF THE PAPER.

Water,..... 32 ounces fluid.
Chloride of ammonium,.....100 grains.
White gelatine,..... 40 grains.

Put the gelatine into a few ounces of the water until it softens, then warm gently until it is dissolved, and add the other materials. Use Saxe paper, and draw it through the solution.

SILVER SOLUTION.

Nitrate of Silver..... 1 ounce.
Water,..... 4 ounces fluid.

Reserve for future use half an ounce of this solution, and to the rest add strong ammonia, a small quantity at a time, stirring with a glass rod after each addition. The brown precipitate which is formed will re-dissolve on the addition of a sufficient quantity of ammonia. When this takes place, add first the half ounce of solution which you have kept in reserve, then ten drops of nitric

acid, and then sufficient water to make a bulk of ten ounces.

This solution should be brushed on to the paper. Half an ounce fluid is enough for one sheet of Saxe paper.

TONING BATH.

No. 1.—Bicarbonate of soda, ... 2 drachms.
Water.....32 ounces.

No. 2.—Neutral chloride of gold.....30 grains.
Distilled water.....32 ounces.

In twenty ounces of water dissolve two drachms of common salt, and add one ounce of each of above solutions. The prints should be well washed before toning. When the toning bath loses its activity, add more of solution No. 2.

FIXING BATH.

Hyposulphite of soda,..... 8 ounces.
Bi-carbonate of soda, ... 1 drachm.
Water,.....32 ounces fluid.

Wash the prints before fixing, and leave them in the bath for ten minutes. Change the fixing solution every day.

PRINTING ON ALBUMEN PAPER.

Float the paper for four minutes on the following solution:

Nitrate of silver,..... 1 ounce.
Distilled water,..... 5 ounces fluid.
Alcohol, ... 1 ounce fluid.

By all means use the chloride of calcium box

in which to keep the sensitized paper and the prints.

TONING BATH.

Use the same as for the ammonia nitrate paper. Albumen paper, however, does not tone as easily as ammonia nitrate paper, so that more of solution No. 2 will have to be used. In winter, keep the bath in a warm place.

FIXING BATH.

The same as above.

POSITIVE COLLODION PROCESS.

POSITIVE COLLODION.

The same as for negatives, but with one-fourth less pyroxyline.

SILVER SOLUTION.

The same as for negatives, but with two or three drops concentrated nitric acid.

DEVELOPING SOLUTION.

Water,	40 ounces fluid.
Protosulphate of iron,	1 ounce.
Acetic acid, No. 8,	1 ounce fluid.
Alcohol,	1 ounce fluid.
Dupont's refined nitre	2 drachms.
Silver solution	2 drachms fluid.

This formula gives brilliant whites. The one given in the negative process can also be used, and gives dead white.

MAJOR RUSSELL'S DRY COLLODION PROCESS.

GELATINE SOLUTION.

Gelatine, ... 60 grains.
Distilled water, ... 12 ounces fluid.
Acetic acid, No. 8, ... 3 drachms fluid.
Alcohol, ... 1½ ounces fluid.

Put the gelatine into the water and leave it until it is soft, then warm to effect its solution, and add the other ingredients.

The plate is coated with this solution. For this it is laid on a leveling stand, and a sufficient of the solution is filtered on to cover it. It is spread over the plate by means of a glass rod. The plate is then set to drain on a piece of blotting paper, and is dried before the fire. If any solution gets on the back, it should be carefully wiped off. The object of this coating of gelatine is to make the film of collodion adhere to the plate.

COLLODION.

Pyroxyline, ... 60 grains.
Alcohol, ... 5 ounces.
Ether, ... 5 ounces.
Iodide of ammonium, ... 20 grains.
Iodide of cadmium, ... 10 grains.
Bromide of cadmium, ... 20 grains.

The plate is coated with collodion in the ordinary way.

SILVER SOLUTION.

Nitrate of silver, ... 1 ounce.
Distilled water, ... 12 ounces fluid.
Iodide of potassium, ... 2 grains.
Acetic acid, ... 2 or 3 drops.

The plate being left in the silver solution for four minutes, is taken out, drained and dipped into a bath containing distilled or rain water, where it is left while another plate is coated and sensitized. The second plate being ready to be taken out of the silver solution, the first is removed out of the first bath of water and put into a second one, while the second plate takes its place in the first bath. From the second bath the first plate is then removed to a third, and finally to a fourth, leaving it in each bath a sufficient length of time to coat and silver another plate, etc. The plate must be moved up and down occasionally. When a dozen plates have been prepared in this way, the water in the first bath is thrown out and replaced, and it is used then as the fourth, the fourth becoming the third, the third the second, and the second the first.

TANNIN PRESERVATIVE.

Pure tannin,..... 6 drachms.
Distilled water,.....24 ounces fluid.
Alcohol, ... 2 ounces fluid.

Dissolve and filter into a bath.

The plate is taken out of the fourth bath, rinsed with distilled water by means of the washing bottle (see engravings figs. 4 and 5,) and dipped into the tannin solution. An even coating is obtained by moving it up and down. It is then taken out, drained, and set to dry on a piece of blotting paper.

EXPOSURE.

The exposure is from six to eight times as long as for wet collodion. It can be much reduced by putting the plate in warm water just before development. (D. Draper.)

DEVELOPING SOLUTION.

No. 1.—Pyrogallic acid, ...96 grains.
Absolute alcohol,..... 1 ounce.

No. 2.—Nitrate of silver,.....10 grains.
Citric acid,.....30 grains.
Distilled water,..... 1 ounce.

Soak the film until it has whitened all over. Wipe the back of the plate. Add one drop of No. 1 to three drachms of distilled water, pour over the plate and back into the developing glass; add then one drop of No. 2, and pour on and off several times. If the image comes out slowly, add more of No. 1, drop by drop; if it appears quickly and looks flat, add more of No. 2. The plate being developed, wash until the oily appearance is removed.

FIXING SOLUTION.

Hyphosulphite of soda,..... 8 ounces.
Water, ...32 ounces.

VARNISH.

Anthony's flint varnish, diluted with alcohol.
J. A. Maggini's negative varnish, or
Humphrey's collodion gilding.

DRY SOLAR CAMERA PROCESS.

The paper should be salted with the following solution:

Water,	32 ounces.
Gelatine,	40 grains.
Chloride of ammonium,	320 grains.

The ammonia nitrate silver solution should be made with one ounce of nitrate of silver to eight ounces bulk, instead of ten ounces.

AMONIA NITRATE SILVER SOLUTION FOR ALBUMEN PRINTS.

Dissolve two ounces of nitrate of silver in six ounces of water, and add ammonia, a little at a time, until the precipitate which first forms is redissolved. Take then one-half of this solution, and add nitric acid until it reddens litmus paper. Mix the two solutions together, add two ounces alcohol, and dilute with water until you have twelve ounces in bulk. The paper is floated on this solution for two minutes.

AN EXCELLENT NEGATIVE COLLODION.

To sixteen ounces of alcohol, add one hundred grains of iodide of potassium, and thirty grains of bromide of potassium, previously dissolved in a little water; then add sixteen ounces of ether, and let settle. Separate the clear part, by means of a

syphon, and add sixty grains of iodide of cadmium. If the liquid be a little milky, the cadmium will clear it. Finally, add from 180 to 240 grains of cotton. The rule is to add as much cotton as you can without interfering with the flowing qualities of the collodion.

TONING BATH WITH HYPOCHLORITE OF LIME—(CHLORIDE OF LIME.)

SILUTION NO. 1.

Chloride of gold,..... 30 grains.
Distilled water,..... 16 ounces fluid.

SOLUTION NO. 2.

Pulverized chalk, ...180 grains.
Hypochlorite of lime,..... 30 grains.
Water,..... 32 ounces fluid.

Take of solution No. 2, previously shaken up, eight ounces, and add it to twenty-four ounces of water. Solution No. 1 is added to this, one ounce at a time, when required for toning.

This toning bath does not precipitate the gold. It can be kept in use day after day, only adding gold solution when it is needed, and two or three ounces of solution No. 2 whenever the well decided smell of chlorine disappears.

A GOOD VARNISH FOR NEGATIVES.

Alcohol, 95 per cent,..... 1 quart.
Sandarac..... 4 ounces.
Mastic, ... 1 ounce.
Gum anima ..... 2 drachms.

Put the pulverized gums, together with the alcohol, into a bottle, and keep in warm water, shaking frequently until dissolved. Then filter through cotton and let settle. This varnish should be dried by heat.

TO VARNISH PHOTOGRAPHS.

I take fine picked gum arabic, and make a solution about as thick as collodion, and spread one coat over the photograph with a clean brush, and set it aside to dry. When dry, I take the "Artist's picture varnish," (to be had of all colormen and dealers in artist's materials,) and having diluted it with twice its bulk of spirits of turpentine, I give the picture a thin coat, which finishes the operation.

If the gum is too thick it will crack, and the picture will be spoiled; if too thin, the varnish will strike through and produce transparent spots; but if the gum and varnish are of the proper consistency, and neatly laid on the surface, it will be almost as fine as heavy albumenized paper.—*Alex. Sinclair's American Journal of Photography.*

ANOTHER WAY OF VARNISHING PHOTOGRAPHS.

The photograph is first well covered over with white wax, softened with oil of lavender. (This

preparation is sold by all stock dealers, under the name of *Photographic Enamel.*) For this purpose use woolen flannel, and rub until the wax is spread evenly all over the photograph, and a fine glossy surface is obtained. Then, by means of a flat, camel hair brush, cover it with alcohol varnish. Humphrey's collodion gilding is excellent for this purpose.

PREPARATION OF CHLORIDE OF GOLD FOR PHOTOGRAPHIC PURPOSES.

The chloride of gold of the trade is often mixed with chloride of sodium in variable quantities, and must thus be more or less uncertain in its working, as the proportions are calculated for pure chloride of gold. For this reason it is advisable for photographers to prepare it themselves. The process of preparation generally given requires the use of evaporating dishes, alcohol lamp, etc.; and unless the operator has some means to carry off the vapor, the rooms are filled with it.

The following is a simplified process, which any one can carry out without trouble or inconvenience: Into an eight ounce bottle put one gold dollar, and pour on it two or three drachms aqua regia, which is a mixture of one part nitric acid, and four parts hydrochloric acids. Set this bottle in the open

air, and leave it there all night. The next morning the gold will be found dissolved, and you will have a solution of chloride of gold, chloride of copper, (for the gold coin contains a small quantity of this metal,) and an excess of aqua regia. Make then a concentrated solution of bicarbonate of soda, and filter it. Add of this solution to the gold liquid, a little at a time, until the liquid ceases to clear up by shaking, and becomes green. This green color is produced by the precipitation of the copper, in the state of carbonate. When this happens, the liquid is perfectly neutral. It is then filtered, and diluted to thirty-two ounces with distilled water.

This solution contains very nearly thirty grains of chloride of gold, and some chloride of sodium, and can be used for toning purposes in all the formulas we have given.

PREPARATION OF NITRATE OF SILVER.

As some photographers might desire to make nitrate of silver with the metal they obtain by the reduction of residuums, we will here give the simplest mode of operating.

The silver extracted from residuums is either in powder or molten. When molten it should be previously hammered flat, in order to present as

large a surface as possible to the action of the nitric acid.

The preparation is carried on in the following way: Take one part by weight of silver, molten or in powder, and put it into a porcelain evaporating dish, with two parts of pure nitric acid and two of water. Cover the dish with a tunnel, and set on a charecoal furnace or over a spirit lamp. The operation should be done in the open air, or under a chimney so as to carry the vapors away.

As soon as the liquid begins to boil, dense red vapors fill the tunnel which will only disappear completely when all the silver is dissolved. If they cease before, more nitric acid should be added, pouring it into the mouth of the dish without taking off the tunnel. All the silver being dissolved, the liquid is kept boiling until it is evaporated to dryness, and a substance of a grey color is left in the dish.

At this period of the operation, the tunnel is removed and the fire slightly stirred. The nitrate of silver soon fuses in a grey liquid. The dish is then taken hold of with a cloth, and the liquid is made to run all around so as to take off the unfused nitrate which adheres to the sides.

The fusion is continued for a minute or two longer, when the dish is withdrawn from the fire

and set to cool on a dry piece of wood. The fused mass may be made to run all over the sides so as to cool it quicker and have it in thin plates. During the cooling the nitrate contracts and cracks all over. It is taken out by thrusting the point of a knife between it and the sides of the dish.

In this state the nitrate of silver is fit for all photographic purposes.

CURE FOR FOGGY BATHS.

When a bath contains organic matter, it is apt to fog the image. The simplest means to restore it to good working order, is to leave it for a few hours exposed to the light of the sun (Charles A. Seely); under the influence of light the organic matter will decompose a small part of the nitric of silver, so that the solution will discolor, and after some time will deposit a black powder. After it is filtered it is again ready for use.

When the bath is acid it should be shaken with some moist oxide of silver, and exposed to light. After filtration it has to be slightly acidified with diluted nitric acid.

TO SHOW ALL THE DETAILS OF A NEGATIVE BY REFLECTED LIGHT.

If a negative presents by reflected light, only a faint image, it is impossible to judge of the posi-

tion and of the expression, so that the photographer is obliged to make a positive print for the inspection of his patron.

But a negative can be transformed into a positive, without losing any of its value, and this is done in a very simple way.

The plate being well washed, flow over it a solution of chloride of gold of the following strength :

Cholride of gold,..... 15 grains.
Distilled water,..... 30 ounces fluid.

This will blacken the outside film and allow the image to be seen in all its details on the glass side. If by flowing the liquid over once the image does not show well enough, repeat the operation.

Instead of a solution of gold, you can use a weak solution of bichloide of mercury (corrosive sublimate.)

In either case, the image is slightly intensified, but this is often an advantage.

All the processes of intensifying can be performed after the operation as well as before.

TO PURIFY DISTILLED WATER.

Distilled water contains sometimes organic matter, which would make it unfit for a silver bath. To purify it, first filter it to separate the floculent mat-

ter it may contain. Then add to it a few grains of nitrate of silver, and about half as much bicarbonate of soda, and set it in the sun. All the organic matter will be thrown down in a short time. The bath made with this water will be slightly alkaline, so that a drop or two more of diluted nitric acid will be needed than usual.

DISCOLORED SILVER SOLUTIONS.

CURE AND PREVENTION.

When a silver solution discolors through the use of albumen paper, several means are used to remove the color and make it again fit for use.—The substance generally employed for this purpose is the one known as *Kaolin* or *China Clay.* The solution is shaken with the *Kaolin* and left in contact with it until the color has been removed.

Instead of Kaolin a small quantity of a solution of common salt can be added to the bath, the precipitate of chlroide of silver, which forms, will deposit after shaking, carrying down all the coloring matter.

Maxwell Lytle proposes to use a solution of phosphate of soda and carbonate of soda, in the following proportions :

Phosphate of soda,..... 2 ounces.
Carbonate of soda,..... 1 ounce.
Water,..... 32 ounces fluid.

One drachm of this solution is added to each pint of discoloured bath, which is then put in the sunlight and when it has cleared up, is filtered.

The addition of one-fourth of alchohol to the silvering bath will prevent its discoloring.

IODO-NITRATE OF SILVER.—PIN HOLES CAUSED BY IT.

Photographers all know that if a collodionized plate is put into a simple solution of nitrate of silver in water, the iodide of silver which is formed in the film will in a few minutes be all dissolved. It is for this reason that a bath has to be iodized before being used, and this is done by adding to it a few grains of iodide of potassium previously dissolved in a little water.

By dissolving iodide of silver in a solution of nitrate of silver, a new compound or double salt is formed which is called iodo-nitrate, of silver. This salt is soluble in a solution of nitrate of silver, and its solubility is in proportion to the strength of the nitrate of silver solution and its temperature. It is insoluble in water, by which, when in solution, it is decomposed in nitrate of silver and iodide of silver, which last compound is precipitated.

Iodo-nitrate of silver can be obtained in crysta-

line needles. For this, dissolve in a warm or boiling 160-grain nitrate of silver solution, as much freshly precipitated iodide of silver as it will take up; let the excess of iodide settle for a few minutes, and pour the clear liquid into a porcelain dish. In cooling a small quantity of iodo-nitrate of silver will crystalize.

Another way to illustrate the crystalization of iodo-nitrate of silver is, to sensitize a collodion plate and allow it to dry. The nitrate of silver on the surface, concentrating by evaporation, will dissolve all the iodide of silver which is in the film. Iodo-nitrate of silver is thus formed, which will crystalize. These crystals will stand a washing with distilled water, and will only be decomposed on the surface, which will be covered with yellow iodide of silver.

Iodo-nitrate of silver may crystallize out of an ordinary silver solution which is saturated with it. This happens:

1. When, by continual use, the solution loses its strength, and, consequently, its power, retaining the same amount of iodo-nitrate of silver in solution.

2. By a reduction in the temperature.

In both cases the salt crystalizes in needles on the sides of the bath and on the plate while it is

being coated. When this happens the plate, after fixing, will be found full of holes. The remedy for uch a bath is very simple ;—Decompose a part of the iodo-nitrate by the addition of a few ounces of water; then filter, to separate the precipitated iodide of silver, and to the clear liquid add a quantity of nitrate of silver corresponding to the quantity of water added previously. For instance, if the bath be 40 grains to the ounce, and you have added 4 ounces of water to it, you will have to add 4 times 40 grains, or 160 grains of nitrate of silver to the filtered solution.

If you only perceive the condition of your bath during the business of the day, and you have no leisure to apply the remedy given above, you can avoid the pin-holes by keeping your plate in motion while it is being coated.

IMPURITIES IN THE NITRATE OF SILVER.

Certain photographers are very apt to blame the nitrate of silver as soon as they get into trouble. They should be cautioned agaiainst this. We can safely say that the nitrate of silver sold by our leading stock dealers, is faultless, and what is true of nitrate of silver is equally so of all other photographic chemicals.*

* We refer to chemicals, and not to mixtures of chemicals, such as collodion varnish, etc., etc.

Some photographers, however, supply themselves at the country drug stores, and for the benefit of these, we will say a few words of the impurities ordinarily found in commercial nitrate of silver.

Crystalized nitrate of silver may be acid, and when acid, it contains often a small quantity of organic matter. A bath made with such an article, will be apt to work foggy. The test for acidity, as everybody knows, is litmus paper. When this turns red in the solution, add to it some oxide of silver, and set it in the sun for one or two hours. Then pour off the clear part, filter and add a drop or two of nitric acid.

Fused nitric of silver gives baths which will only work clear after adding several drops of diluted nitric acid.

Nitrate of silver may be mixed with nitrate of potash, or other alkaline nitrates. In this case there is a loss in quantity only, as the presence of these substances does not unfit the bath for photograghic operations.

Pure nitrate of silver precipitates its weight of iodide of potassium. This furnishes a simple means of testing, if it contains the reqnired quantity of silver.

Proceed as follows: 1st. Dissolve 40 grains of the salt to be tested in two ounces of water; 2d. Dis-

solve also 40 grains of iodide of potassium in two ounces of water; 3d. Dissolve 16 grains of nitrate of silver, which you know to be pure, in two ounces of water; 4th. Mix the first and second solutions together: a yellow precipitate of iodide of silver will be formed, which will settle, leaving the liquid slightly troubled, it containing little yellow particles of iodide of silver in suspension. An addition of the third solution will clear up the liquid. When only a few drops have to be added to accomplish this result, the nitrate of silver may be considered pure. But when larger quantities are added, without clearing up the liquid, the salt is probably mixed with some other nitrate.

To determine how many grains of nitrate of silver are short, add one drachm at a time of the third solution, shaking after each addition until the liquid becomes clear. The number of drachms to be added will represent the number of grains of nitrate sf silver short.

RECOVERY OF SILVER IN THE PRACTICE OF PHOTOGRAPHY.

A small quantity only of the silver used by photographers goes to form the image, while nine-tenths at least remains in the washings and solutions. Now, the larger part of this silver might

be saved without putting the practitioner to any great trouble, and for this purpose, he should adopt in his practice certain methods which we will here describe.

The developing should be done over a tub or barrel, in which a faucet is fitted four or five inches from the bottom, so that the clear liquid can be drawn off every morning without stirring up the deposit which has settled during the night, this deposit is oxide of iron and metallic silver.

The re-developing with silver should be done over this tub, but not the strengthening with other substances, nor the fixing of the image.

The water which has been used to wash the prints previous to toning them, can be treated in two ways ; 1st. It can be put into a barrel and salt added to it to form chlroide of silver, which can be reduced by zinc as described on page 51. It can be thrown into the tub over which the developing is done when the silver will be precipitated in the metallic state.

The water which has been used to wash baths dishes, etc., is treated in the same way.

Paper and cotton used for filtering silver solutions, silvered paper, and bad prints which have been fixed, are put together in a bag or basket.

Trimmmings of finished prints and bad prints

which have been fixed are kept apart in another bag.

The hyposulphite which has served to fix positive prints should be used to fix negatives until it has lost its solvent powers, when the silver it contains is precipitated by means of zinc as described on page 50.

The developing solutions used for paper prints are put into the tub.

Old baths are precipitated with a solution of common salt and the chlride of silver is reduced to the metallic state by means of zinc, as described on page 51.

The deposit in the tub is thrown on a fine muslin filter, stretched over a tub or bucket and there allowed to dry.

The paper and cotton are burned in a little sheet iron stove in which the draught can be regulated, so as to keep the ashes from being drawn up the chimney.

The trimmings of finished prints, etc., are burned and kept apart. The first ashes and the dried deposit of the tub are put together and the whole mass is mixed in a mortar with twice its weight of dried carbonate of potash.

A hessian cruicible is then brought to a red heat in a founder's furnace, and the mixture is put in a

little at a time, waiting until the mass is all in fusion before a new portion is added. When the crucible is full a brisk fire is kept up for a quarter of an hour. It is then allowed to go down and the crucible is taken out, and when cold, is broken, when the metallic silver is found in the bottom.

The priciptate produced by the zinc in old hypobaths is treated as explained on page 50.—Beforehand, however, it is best to roast it in order to burn up as much as possible the sulphur it contains. To effect this it can be added by small quantities when the trimmings of prints are burned to ashes.

Photographers unskilled in chemical manipulations, and those who have not got the convenience of a good furnace, we would advise them to get their reductions done by a good chemist. In all cases residuums containing sulphur should be kept in separate packages.

RECOVERY OF GOLD IN THE PRACTICE OF PHOTOGRAPHY.

Toning baths containing bicarbonate of soda, or any other alkali, will deposit spontaneously the gold they contain. When out of use they should be put in a large jar, and the clear liquid should be poured off after twenty-four hours.

To those which contain no alkali, a solution of

sulphate of iron should be added, which will reduce the gold to the metallic state.

Alkaline toning baths may be treated also with sulphate of iron, but they should beforehand be made acid with hydrochloric acid.

When the gold has deposited in sufficient quantity, it is washed several times, dried, weighed and re-dissolved in nitro hydrochloric acid.

TO EXTRACT THE SILVER OUT OF OLD HYPO-BATHS BY MEANS OF METALLIC ZINC.

If a strip or stick of zinc is put into an old hypobath, the silver will precipitate in the form of a black powder. The reaction is complete when the liquid begins to smell strongly of rotten eggs (hyposulphuric acid.) The liquid is then thrown away, and the deposit is washed repeatedly to get rid of the hypo, and is finally thrown on to a paper filter and allowed to dry.

This precipitate is not metallic silver, but a mixture of this metal with sulphuret of silver. It can therefore be transformed into nitrate by dissolving it in nitric acid.

To transform this deposit into metallic silver, it is mixed with its weight of dried nitrate of potash in a porelain mortar, and thrown by small quantities into a bright red hot crucible; when the

whole mass is fused it is kept on a brisk fire for at least fifteen minutes. The silver will then be reduced, and the crucible is allowed to cool. On breaking it, the metal is found in the bottom.

TO REDUCE CHLORIDE OF SILVER WITH ZINC.

Pour on to the wet chloride of silver twice its volume of water, containing one tenth of sulphuric acid; dip into it a thick sheet of zinc and leave it undisturbed. The reduction of the cholride will begin immediately where it is in contact with the zinc, and will spread from there in all directions. When the whole mass is of a dark grey color, the reduction is complete; and the zinc is taken out. A fresh addition of sulphuric acid is then made to dissolve any particles of zinc that might remain. After an hour or so, the liquid is poured off and the silver is washed carefully until the water ceases to redden limus paper. This washing is done in the following way: The vessel is filled up with fresh water, the mass is stirred up and left to settle, when the water is poured off as near as possible, and fresh water again added to it. It is then stirred up, left to settle, and poured off again. Successive addditions of water are made in this way,

and the operation of pouring off is gone through until the liquid is no more acid.

This silver can, while yet wet, be dissolved in nitric acid to transform it into nitrate.

USE OF OXIDE OF SILVER TO NEUTRALIZE SILVER SOLUTIONS.

Oxide of silver is always preferable to carbonate of soda, caustic potash or ammonia for neutralng silver baths. The oxide of silver is prepared by adding a solution of caustic potash to a solution of nitrate of silver till all the silver is precipitated. The precipitate is left to settle, the liquid is poured off, and the oxide of silver is washed several times with clear, and finally with distilled water until the water ceases to restore the blue color to reddened litmus paper. This oxide of silver is kept in a moist state. When a bath has to be neu-tralized shake it up with some of this oxide of silver and set it in the sun.

EXCESS OF ALCOHOL IN THE BATH.

After being used some time a collodion silver bath will contain a quantity of alcohol. When a collodion plate is sensitized in such a bath and withdrawn it will be remarked that the liquid drains off irregularly and in small waves. This creates

a difficulty in development, the image being almost always stained.

The best way of getting free of the alcohol is to boil the solution down to about three-fourths of its volume, and to dilute it again with distilled water.

DILUTED NITRIC ACID.

It is sometimes necessary to use a very small quantity of nitric acid, as for instance in the negative bath, in which one drop is sometimes too much. In such case we use nitric acid diluted in the following proportions:

Nitric acid C P, ... 10 drops.
Distilled water, ... 1 ounce fluid.

POISONING BY CYANIDE OF POTASSIUM.

Photographers should be very careful in using this substance as it is a virulent poison. If it should be swallowed do not lose time while medical help is procured, but take immediately a solution of sulphate of iron, a crystal the size of a fingerlid dissolved in one pint of water.

Cyanide also poisons by absorption. It is thus dangerous to handle it much, mainly when you have cuts or sores on the hands. When it has been used to remove stains on the skin wash the parts with a weak solution of sulphate of iron.

REMOVING STAINS FROM THE SKIN, LINEN, &c.

Stains of nitrate of silver can be easily removed from linen by the application of a saturated solution of hypochlorite of lime (chloride of lime). This requires from one to five minutes. In this case the metallic silver is changed into white chloride.

Instead of chloride of lime, the following solution can be used.

Cyanide of potassium. ..... 1 ounce.
Water,..... 16 ounces fluid.
Dry iodine, as much as the liquid will take up without coloring.

To this solution add one ounce more of cyanide. It is applied with a small brush, and removes the stains in a few seconds.

Hyposulphite of soda may be substituted to the cyanide of potassium, in which case the stains will not be removed so quickly. Subsequent applications of tincture of iodine and cyanide of potassium or hyposulphite of soda will also produce the same effect.

The same substances which remove the stains from linen will remove them from the skin.

When the color of the fabric is liable to be injured by the cholride of lime or cyanide of potassium, the solution of iodine in hyposulhite of soda is preferable.

Iron stains are removed by the application of a weak solution of oxalic acid.

Stains of collodion will dissolve in a mixture of ether and alcohol.

Iodine, cyanide of potassium, oxalic acid and chloride of lime having a corrossive action, these substances should be removed by rinsing the linen in clean water as soon as their full effect is produced.

NEW METHOD OF WASHING PRINTS.

Hyposulphite left in the print causes it to fade.

A print left for some time in water containing even a small quantity of hyposulphite, will become yellow, a certain proof of sulphuration.

A print left in the water for a great length of time loses its brilliancy.

Thus prints ought to be washed perfectly, and in as short a time as possible.

But which is the best method to attain this?

If you want to wash out a sponge or a piece of linen you will put it in the water to absorb as much of it as possible, then wring the water out and let it saturate again, etc. A print should be washed by the same method.

Mr. G. Shadbolt proposes to drain the prints every time they are taken out of one water to be

put in a fresh portion. This is a step in the right direction.

Some operators lay the print on a thick piece of glass and sponge it, changing the water frequently. This also is rational.

Others who get their water from reservoirs situated high enough to give great pressure, lay their prints on a frame on which coarse linen has been stretched, and sprinkle the water over them through the top of a watering pot perforated with very small holes. If Mr. Shadbolt's method be combined with this, we will get nearer attaining our object.

But we have something better to offer yet.—Most of our readers must have seen a machine for wringing out clothes. It is called *Haley's patent self-adjusting clothes wringer and starcher.* It is composed of two vulcanized rubber rollers pressed together with rubber bands. Now such a machine is invaluable for wringing out prints.

Let the print first be put in clean water or put under the sprinkler to get rid of most of the hyposulphite, then pressed out between the rollers, washed again and again, pressed. Repeat this washing and pressing ten or twelve times and you will get your prints as free from hypo as they can be. Care should be taken to wash the rollers off from time to time.

THE COST OF SILVERING PAPER AND TONING PRINTS.

In a communication to the American Journal of Photography (September 1, 1862) Mr. Charles Wager Hull gives some figures relative to the cost of silvering paper and toning prints. The paper used was salted sixteen grains to the ounce, and probably albumenized, although Mr. Hull does not say so. It was floated for one and a half minutes on a seventy-five grain silver solution. The result of Mr. Hull's experiments, several times repeated, are as follows :

Each card cost less than 3-10ths of a cent.
Each stereograph, less than 3-5ths of a cent.
Each stereograph, 6½ by 8½, less than 1½ cents.
Each stereograph, 8 by 10, less than 2 cents.
Each stereograph, 11 by 14, a trifle over 4 cents.
A sheet of albumenized paper, 17½ by 22, 9½ cents.

For toning one sheet of albumenized paper it requires one grain of chloride of gold, which is worth five cents.

In his experiments Mr. Hull takes no account of the drippings from each sheet, when hung up to dry, all of which is carefully secured, and, as far as this calculation is concerned, is clear gain.

As much as four-fifths of the silver used can also be saved in the washing, and by the reduction of the silver by zinc in the hyposulphite.

A LITTLE TRICK IN SILVERING PAPER.

One litlle trick in silvering paper which but few know, or if they do know, seldom practice, is at least worth mention. When you lift the paper off the silver do so very evenly and very slowly, and you will find that the surface silver will nearly all follow down, and but very few drops will afterwards be left to drain from the corner. Let such as have never taken this care try it and be satisfied that the saving is worth at least all the information costs.—CHAS. WAGER HULL. —*American Journal of Photography.*

TEST FOR THE GROUND GLASS.

Cut a piece of card to an acute angle; rest a straight edge on the front surface of the frame of the focussing glass; rest one edge of the card on the glass, press the wedge under the straight edge, and mark the point where they "cut" each other. Place a glass in the dark slide, pull up the shutter and apply the straight edge and card wedge in a similar manner. If the mark on the card touches the straight edge, the focussing glass and plate occupy exactly the same place or position in the camera; otherwise the plate-holder must be re-adjusted, or the plate will not be in correct focus.

VIGNETTE PRINTING.

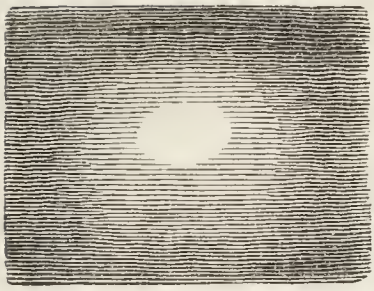


Fig. 11.

Vignettes are printed by means of vignette glasses. Vignette glasses are yellow or red stained glasses, with the color ground off in the middle for the vignette opening. They are laid on the negative while printing.

They can also be made by copying an oval mat cut out of white card board, kept at a distance of one foot from a piece of stretched black velvet. The instrument should be put out of focus, so as to have no sharp edges to the copy. The negative thus obtained is transparent in the middle, and opaque on the sides. It can be strengthened further, if necessary, by means of bichloride of mercury and hydrosulphate of ammonia.

The shading off in vignette prints can also be obtained by placing at about three-fourths of an inch from the negative, a piece of card board with an aperture in it of the shape of the picture, but cut a little smaller. When the printing is done in the sun this aperture is covered with a piece of tissue paper; in diffused light a ground glass is

substituted; or when the light is weak it is allowed to strike the negative directly.

Great care should be taken in printing vignettes to have the printing frames in such a position that the rays fall perpendicularly on the negative.

TO MAKE THE GLASS WINDOWS OF THE OPERATING ROOM SEMI-OPAQUE.

As it is frequently desirable to render the glass of the operating room semi-opaque, we quote the following recipe:

"Make a hot saturated solution of sal ammonia, (chloride of ammonium). Wet the glass window with this solution, laid on equally with a paint brush. The moisture will almost instantly be evaporated, and the salt be evaporated in a very beautiful radiated form. This deposition will admit the light, yet cannot be seen through, and for rendering windows semi-opaque is infinitely preferable to paint, paste, or other materials employed for that purpose."

SUGGESTION TO PHOTOGRAPHERS.

In the *Scientific American* we find the following: "A radical defect in nearly all likenesses taken by the new methods now in use, arises from the fact that the sitter, being in a novel situation, un-

consciously assumes a constrained and unnatural expression of countenance, and having no means of correcting this, it is, of course, repeated in the picture; hence so few setters are entirely satisfied with their photographs. The improvement we suggest is designed to obviate this defect by attaching to the camera an ordinary plain mirror, so adjusted that the sitter, instead of staring into blank space with a feeling of what a ridiculous part he is playing, shall look at his own reflection in the glass during the entire operation. He will thus be enabled at once to assume and retain his ordinary expression of countenance, or take any other that best pleases himself. The picture will be an exact reproduction of the image in the mirror, and cannot fail of being perfect in every respect."

SINGULAR PHOTOGRAPHIC ACCIDENT.

A very singular, and happily uncommon, accident happened to a photographer in Liverpool, and was nearly attended by serious consequences. A stoppered bottle nearly full of crystals of hyposulphite of soda, having stood in a place where it was exposed to a severe frost, the stopper had become consequently somewhat fixed, it was placed near a fire to loosen; after standing a short time,

the operator was just grasping it in his hand, when at the first touch it suddenly exploded, the part in his hand inflicting a deep gash across the ball of the thumb. The blood flowed very copiously, and the surgeon, on dressing the wound, expressed to the friends of the sufferer his certain conviction that lock-jaw must inevitably result. After remaining three weeks in an extremely critical state, and enduring great agony, the patient was declared out of danger, and was happily enabled to resume his duties.

CAUTION TO PHOTOGRAPHERS.

We have often been struck with the carelessness of photographers, in not guarding against accident with poisonous chemicals, and give the following as a warning:

"A boy about two years of age was taken by a servant into a photographer's room at Huddersfield (England), and whilst the girl was sitting for her portrait, the child got hold of an uncorked bottle containing cyanide of potassium, and drank such a quantity that he died in two hours afterwards."

PHOTOGRAPHY AND COMMERCE.

The influence photography has exercised, vastly increasing the demand for so many articles of com-

merce, has been more than once hinted at in this and various contemporary journals. It has been computed that not less than the enormous quantity of twenty tons of nitrate of silver is consumed annually by photographers. In the button manufactories of Prussia the trade has recently received a fresh and most important impetus by the introduction of micro-photographic studs, buttons, &c. The number of these novel productions produced daily for home consumption and exportation is said to be something startling. Not long since, for instance, studs and buttons containing portraits of Garibaldi were sold by the hundred thousand at a time. The large demand for photographic book-marks continues, although when we know that the rate of remuneration for providing and inserting these photographs does not average more than a penny each, the wonder is how that demand is supplied. The immense sale of *cartes de visite* and stereographs, as articles of commerce, is well known. Again: it seems likely that, owing to the great demand for albumenized paper, and the increased purity of the albumen used by most of the best manufacturers, photography is likely to exercise a very serious influence upon the egg market. In *one* establishment alone—that of Mr. J. A. Spencer, of Shepherd's Bush—we find that

half a million of eggs are used annually in the preparation of photographic papers—rather an alarming fact for our pastry manufacturers, and for very many others who are large consumers of albumen.—*British Journal of Photography.*

THE COLOR OF INFINITE ATOMS.

Any substance in infinite division must, of necessity, be black, from its not having breadth enough to reflect a ray of light, which requires certain definite dimensions that philosophers have measured. Metals of all colors exhibit the same phenomenon; white silver, yellow gold, and red copper may all be reduced from solutions to powder so fine that they are black.

STANDS FOR DRAINING GLASS AND DRYING COLLODION PLATES.

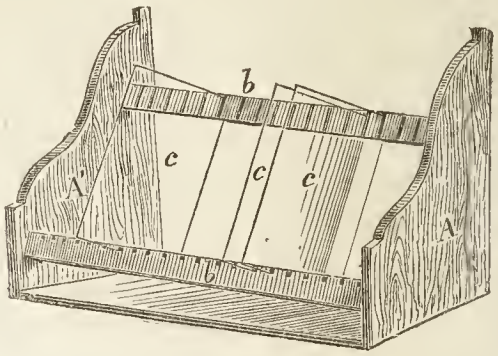


Fig. 1.

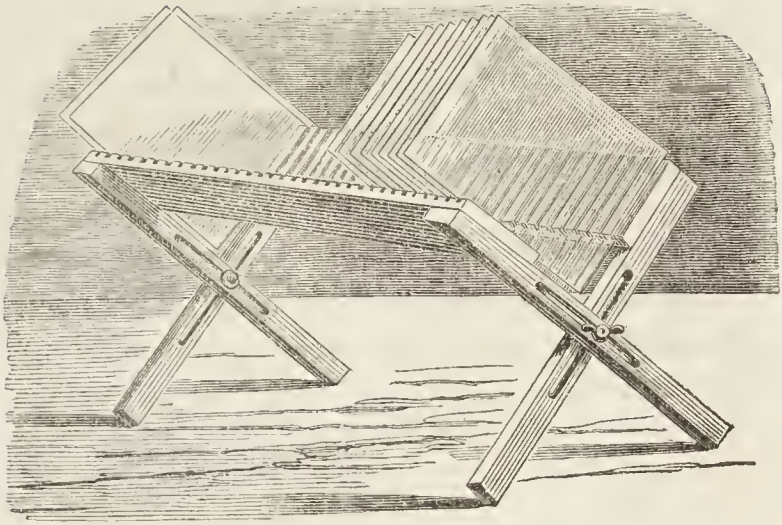


Fig. 2.

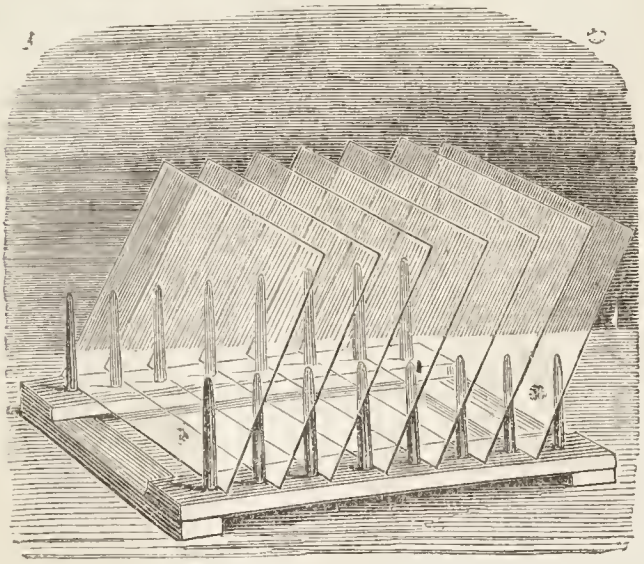


Fig. 3.

The reader sees represented here three apparatus, of different shapes, for draining glasses after they have been washed. A simple inspection of the figures is sufficient for their comprehension. We call attention, more particularly, however, to figure 3, which represents a stand which can be used for plates of different size.

These stands are also very useful to dry collodion plates in the tannin and other dry processes.

WASHING BOTTLES.

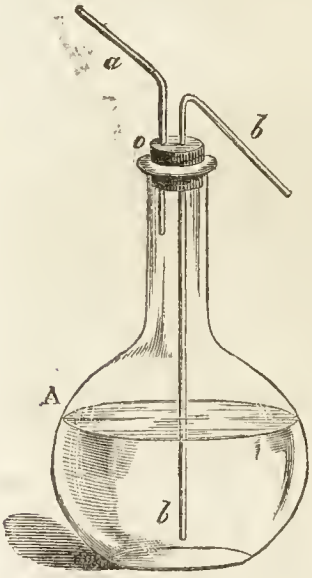


Fig. 4.

Fig. 5.

Figures 4 and 5 represent two washing bottles,

much used in chemical laboratories. In figure 4 the cork O is pierced with two holes, through which pass two tubes. When you blow in tube *a*, the liquid will come out of tube b. Figure 5 represents a washing bottle in which the system of tubes is reversed; it is used by turning it over, when the liquid will pass through the longest tube, and the air be admitted through the shortest. These bottles are very useful for the washings in the dry collodion process. Amateur and professional photographers who have not got abundance of water will find much benefit by their use.

APPARATUS FOR DECANTING COLLODION.

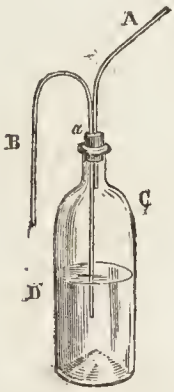


Fig. 6.

In pouring clear collodion out of one bottle into another, the sediment is often stirred up, and the collodion requires to settle again before it can be used. To avoid this stirring up, the little apparatus represented in figure 6 is very useful. The collodion is allowed to settle in the bottle D. When clear the system of tubes represented in the cut is substituted for the cork, and the tube B is pushed into the liquid as far as this is clear. By blowing through the tube A the

collodion will run out of the tube B without the sediment being disturbed in the least. By making the outside branch of tube B longer than the inside branch, the liquid when once started to run will continue until it is on a level with the end of tube B, which is inside the bottle.

PNEUMATIC PLATE HOLDER.

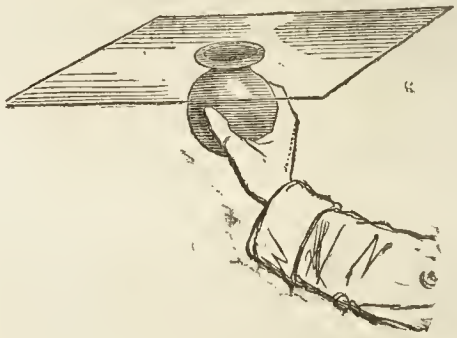


Fig. 7.

When large plates have to be flowed with collodion or developed, nothing is more convenient than the use of the pneumatic plate holder, of which figure 7 will give an idea. This instrument is made of india rubber, and is hollow. To use it press the air out of it, apply the mouth to the glass and cease the pressure. It will then adhere strongly so that the glass can be handled any way without slipping off.

BOX IN WHICH TO KEEP SENSITIZED PAPER AND PRINTS.

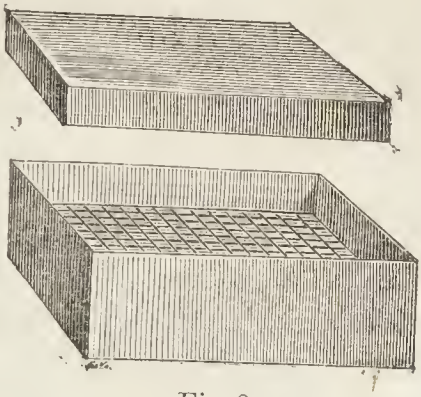


Fig. 8.

Sensitized paper, although kept in perfect darkness, sometimes turns brown in a few hours. This alteration, which is caused by the action of nitrate of silver on the sizing of the paper, is principally observed in damp weather. Albumen paper is more liable to it than plain salted paper; and such as is sensitized with ammonia-nitrate more so than that floated on a simple solution of nitrate of silver. When kept in a perfectly dry atmosphere, however, even albumen paper floated on ammonia-nitrate of silver will keep for several days. To attain this object, use is made of the properties of chloride of calcium, a salt which absorbs moisture with great avidity, and which, for this reason,

is used as a desiccating agent in chemical operations. The apparatus consists of a square or round zinc box, (fig. 8,) with a very tight-fitting cover. In the bottom of the box is put a sheet-iron pan, filled with dried chloride of calcium. Above it, and resting on a border, is a wire frame on which is laid the sensitized paper. A professional photographer should possess two of these boxes—one in which to keep his sensitized paper, and another in which to keep the prints until the time comes for toning. It is readily seen that the box should be left open as little as possible, to keep out the moisture. Perhaps some improvement might be introduced by which it would not be necessary to take off the cover every time a piece of paper or a print was put in. For instance, the cover might be pierced with a hole on the top, through which the prints might be slipped into the box, and this hole might be shut by laying a piece of ground glass over it; or, better yet, with an easily fitting cover.

For more security against the entrance of moist air, an india rubber band might be stretched around the joint of the large cover. After being used some time, the chloride of calcium becomes wet. When this happens take out the sheet-iron pan containing it, and leave it on the top or in the

oven of a stove until the salt is again dry. This operation can be performed over and over again without it losing its quality.

It is to be hoped that some one of our enterprising manufacturers will take the matter in hand and furnish this useful apparatus to American photographers.

The credit of this simple, yet useful, invention is due to Messrs. Barreswil & Davanne, two chemists to whom the photographers are greatly indebted, and who have written the best work on photography in the French language.

DRY PLATE BOX.

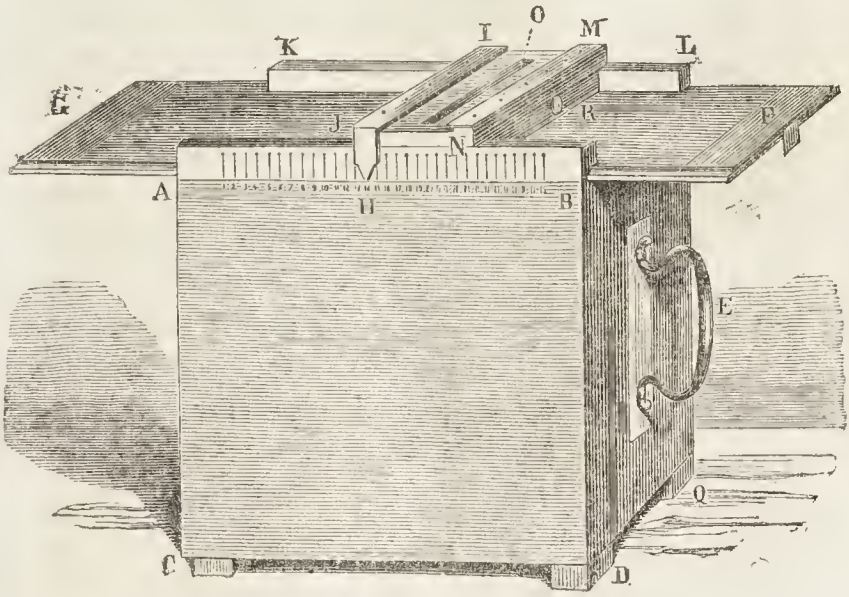


Fig. 9.

Photography on dry plates would be attended with considerable trouble, if it was necessary to have a dark tent to change the plates from the plate box to the holder, or if a plate holder was used for each plate.

The box, figure 9, and plateholder, 10, constitute a very ingenious apparatus which simplifies greatly the dry processes, as it allows you to change the plates in the open air.

The plate box, A B C D Q, represented in figure 9, is calculated to hold 32 plates of the stereoscopic size. The grooves inside are rounded out and smoothed, so that only the edges of the plates come in contact with the wood.—This is to prevent the scratching of the film. The bottom of the box is lined with india rubber. G F is a cover which slides

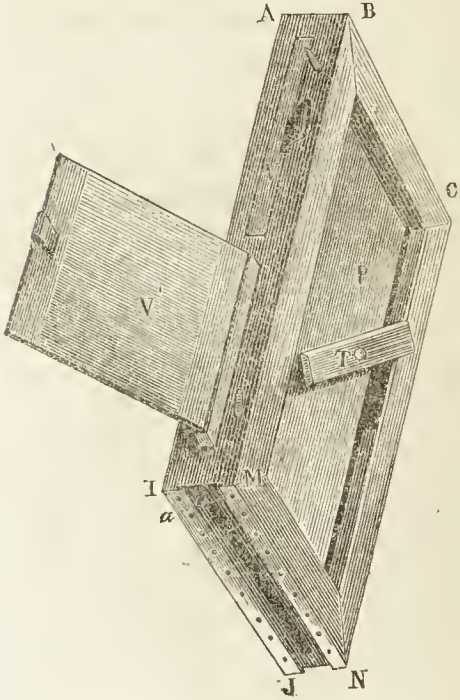


Fig. 10.

an the grooves K L and A B. The upper side of these grooves is lined with cloth to make the cover slide smoothly. This cover is composed of two parts hinged together in I J.—(The hinges cannot be seen in the figure.) The part G I J, when slid out, comes down on the side A K C, and is fastened with a hook. The part F I J always remains between the grooves, being stopped by the catch F. I J M N is fastened on the cover I J F, and slides with it. In it is an opening O of the width of the glasses. This opening is shut by means of a slide pushed by a spring. The knob R is fastened to this slide so that in pulling it the opening O is uncovered; when you let it go the opening is covered again by the tenon of the spring pushing the slide.

A B is a piece of brass marked with divisions corresponding to the plates inside. H is a hand fastened to the part I J M N; so that if I bring the hand H to mark one of the divisions, and I turn the box over, pulling at the same time at the knob R, the plated marked will fall out.

The plate holder (fig. 10) is also of a peculiar construction. Suppose an ordinary stereoscopic plate holder, with double slides V and V, the one represented in the figure open, and the other shut. On the outside is fastened a frame, B C M N,

within which the back P is movable. Two springs in the thickness of the frame push this back up. T serves to maintain it in either of its two position up or down.

I J M N, fig. 10, slides on I J M N, fig. 9. An opening is seen in the plateholder, just over the opening O in the box. This opening is shut by a border attached to the back P. If the back P pushed outward by the springs is fastened by T, the opening is uncovered; if on the contrary the back is pushed down, the border covers the opening.

I suppose now a plate has to be changed from the box to the plateholder; the plateholder is slid on to the box, the back P is fastened so as to leave the opening uncovered, the whole thing is turned upside down, the knob R is pulled, and the plate falls from the box into the plateholder; the back P is then pushed down and fastened, and the plate is exposed. To return the plate to the box, slide the plateholder on to the box, pull the knob R, pull P back, and the plate will fall back into the box.

One end of the box should be marken FACE, and all the plates placed with their face towards that end.

MELAINOTYPE.

New Brands of Iron Plates for Positive Photography.

It is unnecessary to speak of the unrivaled merits of this Plate; it has been too long and familiarly known to the public and to Artists now to sound its praise. It is deservedly esteemed by all who admire a GOOD PICTURE, and Operators find it an indispeusable desideratum. After an experience of seven years in furnishing these plates to the Trade, I can *warrant them the best and only reliable Plate* offered for

PHOTOGRAPHIC PURPOSES.

Of late many false representations are industriously circulated against my plates. The best refutation of all such statements is the fact that I am still manufacturing

Various and New Brands of my Celebrated Iron Pla

Under my general title,

MELAINOTYPE.

And I do hereby offer inducements to

Every Stock Dealer in the United States, Canadas, and elsewhere,

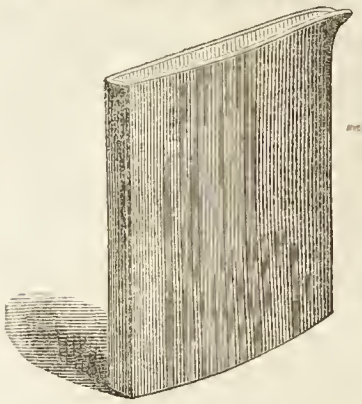
Such as never before were offered, for the reason that heretofore my sales have been confined to a very few leading Houses; these agencies have ceased, and you can now purchase direct from me—the manufacturer.

I WARRANT ALL MY PLATES GOOD,

And any Plates which are condemned will be returned to me where purchased, and if, after examination of them, they prove bad when taken from original package, and if they are not IMITATIONS of my Plates put into my boxes, other Plates which are good will be exchanged for them.

Recent impositions call for this explicit statement on my part.

MATHIOT'S PATENT
Photographic Ware Baths,



Made expressly for the purpose of holding strong acid and silver solutions. They can be had with or without the overflow, as may be preferred. They are also made to be used as field baths, for out-door practice, and can be fitted with a cover, so as to be perfectly air-tight. They are found to possess every qualification that can be called for, besides innumerable advantages over any other in use.

Read the Following.

FROM A NEW YORK CITY OPERATOR.

"I would say—for the benefit of the Photographic and Ambrotype profession generally—that for over three years past I have used no other kind of Bath than the one described above, and believe it to be the best and only reliable article now in use. I have now seven in daily use.

"J. H. YOUNG. 145 Eigth Auenue, N. Y."

Extract from the London "Dictionary of Photography,"(by Thoms Sutton, Esq., the Editor of "Photographic Notes.") page 131:—

* * * * "Porcelain Baths are very objectionable, as nitrate of silver acts on the glaze. There is a substance used in America for baths and dishes called PHOTOGRAPHIC WARE, which resembles WEDGEWOOD WARE, and has no glaze; this answers the purpose admirably.

Extract from the "British Journal of Photography."

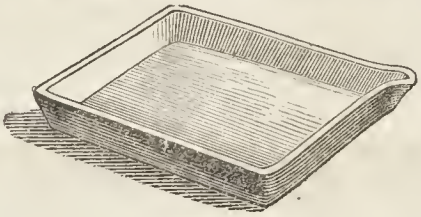
* * * * "We have used porcelain, white earthenware, and glass Baths. The first and last met the general approval except in the quality of high price. We were the first to abandon gutta percha. At present, the most popular Bath is known as the Photograhic Ware, an invention of George Mathiot.

PRICES.—¼ size 75 cents; ½ size $1 00; 4-4 sizes $1 75; 9x11 $2 50.

For Sale by all Stock Dealers.

DISHES, DISHES, DISHES.

Something New and Useful.



The Photographic Ware Baths have had such a continued popularity that the manufacturers, in order to oblige numerous customers, are now offering their new style of

PHOTOGRAPHIC WARE DISHES.

Since their first introduction, some months since, the demand for these popular Dishes has been indeed unprecedented. Their advantages are patent. They will not crack or check, and they are entirely impervious to all acid solutions. They are very strong, and will last for years. Do not fail to order the

PHOTOGRAPHIC WARE DISHES,

If you want to get the full value of you money. They can be had five different sizes, viz ;

5 by 7	$0 44	10 by 12	$1 38
7 by 9	0 69	12 by 16	2 50
8 by 10	0 88		

And other sizes will soon be furnished. Again we say to Operators and Amateurs, use none but

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